

**LAC Minerals Large Scale Mine Permit No. 445 and 460
Final Inspection Report**

Operator: LAC Minerals
Project: Final Inspection
DENR Inspectors: Mike Cepak, Eric Holm, Roberta Hudson, Mike Lees, and Mark Keenihan
Operators Present: Mark Tieszen, Todd Duex, and Gene Fuller
Consultants Present: Patty Corbetta, Environmental Resources Management (ERM)
Inspection Dates: August 18 and September 30, 2010, September 4, 2013
Time In/Out: August 18, 2010 7:50 am to 5:25 pm MDT
September 30, 2010 1:00 pm to 4:15 pm MDT
September 4, 2013 9:50 am to 2:30 pm MDT

The purpose of the inspection was to conduct the final inspection of the Richmond Hill Mine for LAC Minerals since the company will be submitting a release of liability petition and postclosure plan for the entire mine site later in 2010 or early 2011 (Note: the release of reclamation liability petition, postclosure plan, and updated reclamation plan were submitted on July 25, 2014). The final inspections were conducted all day on August 18, 2010 and the afternoon of September 30, 2010. A follow-up inspection was conducted on September 4, 2013.

In attendance for the August 18, 2010 final inspection were Mike Cepak, Eric Holm, Roberta Hudson, and Mike Lees (DENR), Mark Tieszen, Todd Duex, and Gene Fuller (LAC Minerals), and Patty Corbetta (ERM). Mike Cepak, Eric Holm, Mike Lees Roberta Hudson, and Mark Keenihan (DENR) and Mark Tieszen, Todd Duex, and Gene Fuller (LAC Minerals) attended the September 30, 2010 inspection. Mike Cepak and Eric Holm (DENR) and Mark Tieszen, Todd Duex, and Gene Fuller (LAC Minerals) attended the September 4, 2013 follow-up inspection.

August 18, 2010 Inspection

Eric Holm (DENR) met Mark Tieszen, Todd Duex, and Gene Fuller (LAC Minerals), and Patty Corbetta (ERM) at the Homestake office in Central City at 7:50 am MDT. Mike Cepak, Roberta Hudson, and Mike Lees (DENR) would join the group later in the morning. Before we left for the mine site, we discussed the status of the release petition, the postclosure plan, and the updated reclamation plan. Both LAC Minerals and ERM thought the three items may be submitted by the end of August. Also, Patty Corbetta asked Mr. Holm to send her a copy of the department's acreage map and shapefiles. The map and shapefiles were emailed to her after the inspection.

Spruce Gulch

We arrived at the mine site at 8:30 am MDT. The first area inspected was the former Spruce Gulch Waste Rock Depository (Photos SG-1 and SG-2). The total affected and reclaimed acreage for the Spruce Gulch area is 50.51 acres. This does not include the access roads (3.70

acres), a topsoil stockpile (0.37 acres), or the Spruce Gulch Ponds (5.38 acres) which are currently unreclaimed except for portions which are under interim reclamation.

Acidic waste rock was removed from this area in 1994 and 1995 and placed in the Pit Impoundment. After the waste rock was removed, the exposed natural soils were amended with limestone which was disked in to a depth of approximately six inches. The area was regraded to original contours, and natural drainage channels were reconstructed. About six inches of topsoil were placed on the graded areas as required in the original reclamation plan and in the January 26, 1998 technical revision.

The Spruce Gulch area was seeded in 1995 and was in its 15th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision. Trees and shrubs were seeded or planted in four habitat zones (Birch, Spruce, Transition, and Oak-Aspen) as outlined in the July 14, 1998 technical revision.

LAC’s consultant Bar XX Environmental Services established four vegetative transects in this area (SG#1, SG#2, SG#3, and SG#4) and collected vegetation data from each transect from 1997 through 2000, 2005, 2010, and 2013. Each transect was established on north and south facing slopes. The data is summarized in Table SG-1.

Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
SG#1	53% (1999)	91% (2013)	67%	22%
SG#2	62% (2005)	82% (1997)	72%	25%
SG#3	45% (1997)	60% (2005)	51%	29%
SG#4	59% (1997)	79% (2010)	70%	25%
Monitoring Average (1997 – 2013)			65%	25%

Cedar Creek Associates also evaluated vegetation in the Spruce Gulch area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table SG-2.

Transect	Vegetative Cover	Litter Cover
1	60%	25%
2	55%	41%
3	68%	31%
4	70%	19%
5	68%	20%
6	75%	22%
7	84%	10%
8	77%	22%
9	80%	13%
10	51%	20%
11	66%	27%

12	79%	18%
13	52%	25%
14	71%	26%
15	83%	16%
16	67%	23%
17	68%	26%
18	48%	29%
19	72%	26%
20	68%	22%
Average	68%	23%

The overall average vegetative cover in Spruce Gulch noted during the inspection was estimated at 65 percent which is above the 40 percent standard and close to the cover averages determined by Bar XX Environmental and Cedar Creek (Photos SG-3 through SG-5). Overall litter cover was estimated around 25 percent which is close to the averages determined by Bar XX Environmental and Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western, slender, and thickspike wheatgrass, hard fescue, white dutch clover, rocky mountain penstemon, blanket flower, prairie coneflower, black-eyed susan, and blue flax. Other species noted include green needlegrass, crested wheatgrass, yellow and white sweetclover, alfalfa, black medic, horsemint, strawberry, assorted vetches, goldenrod, asters, goatsbeard, sedges, sage, field horsetail, meadowsue, peavine, moss, yarrow, bluebells, and violets. Hard fescue is the dominant species. In the wetland area upstream from the ponds, reed canary grass and cattails were prevalent (Photo SG-6). Many of these species were also found in the various transects.

Noxious and other weeds present include canada thistle and a small patch of spotted knapweed near the wetland area. No infestations were noted, but the canada thistle and spotted knapweed will need to be sprayed during the postclosure period to keep them under control.

Bar XX Environmental established various transects in Spruce Gulch to evaluate tree and shrub success from 1997 through 2001, 2003, 2005, 2007, 2009, 2010, 2012, and 2013. Belt transects were established to evaluate containerized plantings in the four habitat zones mentioned on page 2. A macroplot and belt transects were established to evaluate shrub seeding and containerized plantings. Finally, 64 tree spade transplants were evaluated. The number of trees and shrubs found in each transect and plot is summarized in Table SG-3.

	Baseline	1997	1998	1999	2000	2001	2003	2005	2007	2009	2010	2012	2013
Containerized Belt Transects	62	61	44	42	46	42	47	46	30	32	34	32	32
Shrub Macroplot	NA	62	27	70	68	38	35	24	1	0	1	2	2
Shrub Belt Transects	NA					66	65	70	28	23	22	21	20
Tree Spade Transplants	64	61	59	57	55	54	52	48	46	48	46	43	43
Tree Farm Transplants	21	21	21	21	21		21	16	12	20	15	13	13

Cedar Creek also established 20 belt transects in 2008 to evaluate trees and shrub success in Spruce Gulch. Each transect was 2 m x 50 m. The data is summarized in Table SG-4.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Paper Birch			2			1	4					1		1								9	18.2
Ceanothus								6	2				1		2						2	13	26.3
Black Hills Spruce							1															1	2.0
Ponderosa Pine			1					1	6							1						9	18.2
Aspen			1				1	16			3	1										22	44.5
Chokecherry									1	3												4	8.1
Bur Oak										3				1							2	6	12.1
Woods Rose		1	2		1	1		4		5												14	28.3
Raspberry	1								11													12	24.3
Willow						33																33	66.8
Snowberry		1																				1	2.0
Total	1	2	6	0	1	35	6	27	20	11	3	2	1	2	2	1	0	0	0	0	4	124	250.9

We inspected tree and shrub plantings in the Spruce Gulch area. There are additional trees and shrubs noted during the inspection that are outside the various transects and plots. Trees and shrubs noted include raspberry, currant, willow, ceanothus, serviceberry, thimbleberry, juniper, ponderosa pine, aspen, birch, bur oak, black hills spruce, snowberry, oregon grape, chokecherry, woods rose, spirea, kinickinick, and cottonwood (Photos SG-7 and SG-8). Many of these species were also found in the various tree and shrub transects and plots. Woods rose, ceanothus, and bur oak are doing exceptionally well in this area (Photos SG-9 and SG-10). The decrease in trees and shrubs after 2005 can be attributed to mortalities from weed spraying.

We also inspected the sawdust area in the central portion of the former waste rock depository (Photo SG-11). Vegetative cover in the sawdust areas has greatly improved over the past couple of years. It blends in with the rest of the area.

The reclaimed meadow provides improved wildlife habitat with large foraging areas and interspersed tree and shrub cover that were minimal in the pre-mine forested area. There is evidence that deer and other wildlife are using the reclaimed Spruce Gulch area. Several deer bedding areas were noted during the inspection along with deer pellets and tracks (Photo SG-12). The company has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

We hiked up from the wetland area to the access road and met Mike Cepak, Roberta Hudson, and Mike Lees (DENR). We noted a washout area along the road (Photos SG-13 and SG-14). Mr. Duex said the washout was the results of recent heavy rains at the mine site. He added that the washout area and other areas impacted by the storm would be repaired in the next few weeks. Otherwise, only some minor erosion (less than one percent of the area) was noted during the inspection.

Spruce Gulch Summary

See Map A-1. After the waste rock was removed in the Spruce Gulch area, it was returned to original contours. Final grading, landshaping, and topsoil placement in the area have been completed. After 19 years of growth, South Gulch has a diverse and self sustaining average vegetative cover of 65 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. Numerous trees and shrubs were noted throughout the reclaimed area. The combination of the vegetative and litter cover is effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

The postmine land use for Spruce Gulch is wildlife habitat. In the release petition, LAC Minerals describes how improved wildlife habitat has been created. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation appears to be controlling erosion and benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' reclamation liability for 50.51 acres of the former Spruce Gulch Waste Rock Depository and place it under postclosure status to monitor and treat exceedances of ground water quality standards in wells in the area (see Hydrology Assessment report). The access roads (3.70 acres), a topsoil stockpile (0.37 acres), and the Spruce Gulch Ponds area (5.38 acres), which are currently unreclaimed and will be used during the postclosure period, are not eligible for release of reclamation liability. These areas will be reclaimed at the end of the 100-year postclosure period.

Limestone Quarries

After conducting final inspections for EXNI- 278 and 320 and taking a lunch break, we resumed the final inspection for the Richmond Hill Mine at 1:15 pm MDT. Gene Fuller left the group to find someone to grade the access road to EXNI-222. We arrived at Limestone Quarry No. 1 where the fossils were discovered (Photo LQ-1).

The total affected and reclaimed acreage for Limestone Quarry No.1 is 4.16 acres. A 3.66 acre portion of this quarry is covered under Large Scale Mine Permit No. 460. The quarry has been partially backfilled and the quarry highwalls were left at angle of repose slopes to allow for future fossil excavations and study as allowed under technical revision conditions (Photo LQ-2). After minor regrading, approximately six inches of topsoil was placed on the floor and benches of the quarry.

Limestone Quarry No. 1 was seeded in 1996 and was in its 14th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision. Trees and shrubs were seeded or planted in various habitat zones as outlined in the July 14, 1998 technical revision.

LAC's consultant Bar XX Environmental Services established one vegetative transect in Limestone Quarry No. 1 (LQ-1) and collected vegetation data from the transect from 1997 through 2000, 2005, 2010, and 2013. The data is summarized in Table LQ-1.

Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
LQ-1	66% (1999)	86% (2013)	75%	23%
Monitoring Average (1997 – 2013)			75%	23%

Cedar Creek Associates also evaluated vegetation in the Limestone Quarry No. 1 area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table LQ-2.

Transect	Vegetative Cover	Litter Cover
1	68%	29%
2	47%	36%
3	56%	38%
4	69%	31%
5	68%	23%
6	55%	38%
7	55%	35%
8	84%	15%
9	70%	20%
10	75%	24%

11	82%	16%
12	73%	18%
13	77%	20%
14	70%	25%
15	76%	15%
16	73%	25%
17	80%	18%
18	72%	28%
19	76%	13%
20	76%	20%
Average	70%	24%

The vegetative cover noted during the inspection averaged around 65 percent which is above the 40 percent standard and close to the cover averages determined by Bar XX Environmental and Cedar Creek (Photos LQ-3 and LQ-4). Overall litter cover was estimated around 25 percent which is close to the averages determined by Bar XX Environmental and Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western and slender wheatgrass, hard fescue, blanket flower, blue flax, prairie coneflower, and black-eyed susan. Other species noted include alfalfa, black medic, horsemint, goatsbeard, and moss. Hard fescue is the dominant species.

Noxious or other weeds noted include mullein, tansy, and St. John’s wort. No infestations were noted, but St. John’s wort will need to be sprayed during the postclosure period to keep it under control.

Cedar Creek did not collect tree and shrub data in the Limestone No. 1 Quarry area. However, Bar XX Environmental established various transects in the area to evaluate tree and shrub success from 1997 through 2001, 2003, 2005, 2007, 2009, 2010, 2012, and 2013. Four belt transects were established to evaluate containerized plantings. A macroplot was established to evaluate shrub seeding. The number of trees and shrubs found in each transect and plot is summarized in Table LQ-3.

	Baseline	1997	1998	1999	2000	2001	2003	2005	2007	2009	2010	2012	2013
Containerized Belt Transects	11	11	11	9	12	7	5	6	3	6	2	2	2
Shrub Macroplot	NA			5	7			7	1	1	5	5	5

During the inspection, we looked at trees and shrubs in the Limestone Quarry No.1 area. Trees and shrubs noted include currant, ceanothus, serviceberry, ponderosa pine, birch, bur oak, black hills spruce, and spirea. One currant bush was full of fruit at the time of the inspection.

Limestone Quarry No. 2 was briefly inspected. A portion of the quarry was reclaimed, but a sludge pond was constructed in the remaining portion is quarry. Since the 0.91 acre sludge pond has not been reclaimed, this area will not be released at this time. However, LAC has requested

release of liability for the 1.63 acre reclaimed portion just to the south and east of the sludge pond. Final grading, landshaping, and topsoil placement have been completed in this portion of the quarry. Six inches of topsoil were placed on the graded areas as required in the original reclamation plan. Only some minor erosion (less than one percent of the area) was noted.

The reclaimed portions of Limestone Quarry No. 2 were seeded in 1996 and were in the 14th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision. Trees and shrubs were seeded or planted in various habitat zones as outlined in the July 14, 1998 technical revision.

LAC’s Consultant Bar XX Environmental did not collect any vegetative cover data for this quarry. However, Cedar Creek Associates evaluated vegetation in the Limestone Quarry No.2 area in 2008 as part of the release petition. Three systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table LQ-4.

Transect	Vegetative Cover	Litter Cover
3	94%	4%
4	82%	16%
5	89%	9%
Average	88%	10%

The vegetative cover noted during the inspection averaged around 80 percent which is above the 40 percent standard and close to the 88 percent transect cover average determined by Cedar Creek. Overall litter cover was estimated around 10 percent which is close to the average determined by Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, western wheatgrass, hard fescue, blue flax, and rocky mountain penstemon. Other species noted include black medic and yarrow. Hard fescue was the dominant species. No noxious or other weeds were noted.

Cedar Creek did not collect tree and shrub data in the Limestone No. 2 Quarry area. However, Bar XX Environmental established transects and plots in the area to evaluate tree and shrub transplant success from 1997 through 2001, 2003, 2005, 2007, 2009, 2010, 2012, and 2013. A macroplot was established to evaluate shrub seeding. Also, 20 tree spade transplants were evaluated. The number of trees and shrubs found in the transplant transect is summarized in Table LQ-5.

	Baseline	1997	1998	1999	2000	2001	2003	2005	2007	2009	2010	2012	2013
Shrub Macroplot	NA				15			6	0	6	9	8	9
Tree Spade Transplants	26	25	25	23	20	20	20	20	20	20	19	19	19

During the inspection, we looked at trees and shrubs in the Limestone Quarry No.1 area. Trees and shrubs note include ponderosa pine, ceanothus, and birch.

The company has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Although there was no evidence of deer and other wildlife using the reclaimed quarry areas area during the inspection, wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Only some minor erosion (less than one percent of the area) was noted during the inspection.

Limestone Quarries Summary:

See Map A-1. Limestone Quarry 1 has been partially backfilled, and the quarry highwalls were left at angle of repose slopes to allow for future fossil excavations and study as allowed under technical revision conditions. After minor regrading, approximately six inches of topsoil was placed on the floor and benches of the quarry. Portions of Limestone Quarry 2 have been regraded and topsoil was applied. After 18 years of growth, the reclaimed pit floor and benches of Limestone Quarry No. 1 and the reclaimed portions of Limestone Quarry No. 2 have a diverse and self sustaining average vegetative cover of 65 percent and 80 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. The combination of the vegetative and litter cover is proving effective in controlling wind and water erosion on the backfilled pit. Only minor (less than one percent) erosion was noted in the area during the inspection.

The postmine land use for Limestone Quarries 1 and 2 is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

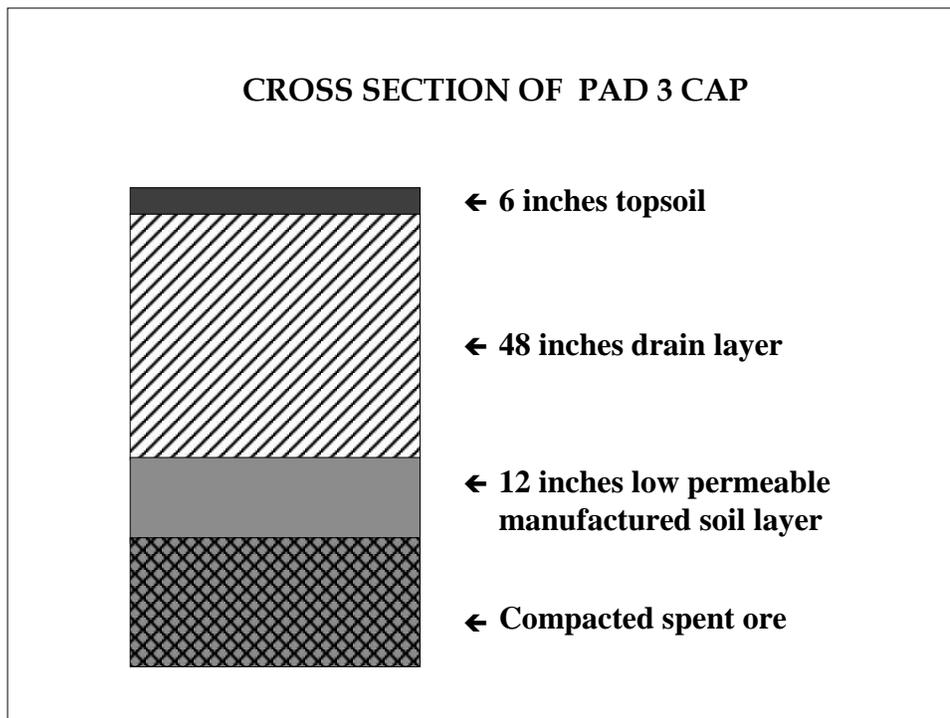
The department recommends the Board of Minerals and Environment release LAC Minerals' liability for 4.16 acres of Limestone Quarry No. 1 mined under Mine Permit No. 445 and 3.66 acres mined under Large Scale Mine Permit No. 460. The department also recommends the board place the 4.16 acre area mined under Mine Permit No. 445 under postclosure status in the event water quality conditions warrant further assessment. A postclosure period is not necessary for the 3.66 acre area mined under Mine Permit No. 466 since surface and ground water quality standards have been met.

The department recommends the Board of Minerals and Environment release LAC Minerals' liability for 1.63 acres of the reclaimed area affected by Limestone Quarry No. 2 and placed it under postclosure status for further water quality assessment. The 0.91 acre area affected by the Sludge Pond at Limestone Quarry No. 2 will be reclaimed in 2019 and will not be released at this time.

Leach Pad 3

The next stop on the inspection was Leach Pad No. 3 (Photo LP3-1). We arrived at the leach pad at 1:47 pm MDT. The total affected and reclaimed acreage for Leach Pad No. 3 is 27.18 acres.

During final reclamation, approximately 727,000 tons of sulfide-bearing spent ore with a high potential to generate acid was removed and placed in the Pit Impoundment. During final grading of the remaining spent ore, limestone was mixed in to mitigate any remaining acid generating potential. Leach pad slopes were reduced to 3:1 (H:V). The leach pad french drain was capped since it was constructed with sulfidic waste rock, and drainage was diverted toward the V-Notch to the southwest. A multi-layer cap, which was placed on top of the regraded leach pad, was constructed in accordance with the approved plans and specifications as follows:



Leach Pad 3 was seeded in 1996 and 97 and was in its 14th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the grass mix for capped areas included in the February 16, 1994 ARD permit amendment. Since a cap was placed over Leach Pad 3, tree and shrub plantings were prohibited.

LAC's consultant Bar XX Environmental Services established two vegetative transects on the leach pad (Pad3-#2 and Pad3-#3) and collected vegetation data for the transects from 1998 through 2013. The transects were established on a south facing slope and on top of the leach pad. The data is summarized in Table LP3-1.

Table LP3-1– Leach Pad 3 Vegetation Summary (1998-2013 Data)				
Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
Pad3-#2	33% (1998)	67% (2008)	57%	24%
Pad3-#3	46% (2002)	80% (2013)	62%	32%
Sixteen Year Monitoring Average (1998 – 2009)			60%	28%

Cedar Creek Associates also evaluated vegetation in the Leach Pad No. 3 area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table LQ-2.

Table LP3-2 – Leach Pad No. 3 Vegetation Summary (2008 Data)		
Transect	Vegetative Cover	Litter Cover
1	60%	26%
2	68%	28%
3	83%	16%
4	71%	23%
5	65%	28%
6	68%	26%
7	62%	38%
8	69%	31%
9	54%	34%
10	70%	28%
11	76%	22%
12	67%	26%
13	63%	26%
14	57%	35%
15	64%	14%
16	57%	42%
17	58%	35%
18	48%	46%
19	74%	20%
20	54%	40%
Average	64%	29%

The vegetative cover noted during the inspection averaged around 60 percent which is above the 40 percent standard and close to the transect cover averages determined by Bar XX Environmental and Cedar Creek (Photos LP3-2 through LP3-4). Overall litter cover was estimated around 25 percent which is close to the averages determined by Bar XX Environmental and Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, smooth brome grass, western, slender, and thickspike wheatgrass, hard fescue, white dutch clover, blanket flower, and rocky mountain penstemon. Other species noted include yellow sweetclover, black medic, assorted vetches, goldenrod, asters, goatsbeard, moss, and yarrow. Smooth brome grass and hard fescue are the dominant species.

Noxious and other weeds noted in this area include dandelion and tansy. No infestations were noted, but tansy will need to be sprayed during the postclosure period to keep it under control.

Since trees, shrubs, and other deep rooting species were prohibited from being planted on the capped area, Bar XX Environmental did not collect any tree or shrub data. However, Cedar Creek established 20 belt transects in 2008 to check for any volunteer trees or shrubs that require removal. Each transect was 2 m x 50 m. The data is summarized in Table LP3-3.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Ceanothus							1							1			1				1	4	8.1
Ponderosa Pine																			1			1	2.0
Total							1							1			1		1	1	1	5	10.1

Even though no trees or shrubs were planted, a few volunteer ceanothus shrubs were noted on the leach pad (Photo LP3-5). LAC has been spraying the ceanothus to eliminate it from the capped area. A couple of live ceanothus shrubs were noted during the inspection which will need to be sprayed. LAC will need to continue spraying the ceanothus during the postclosure period to keep it off the leach pad.

Monitoring results on the capped leach pad show that only minimal settlement has occurred since 1997. Settlement rates have ranged from 0.00 to 0.05 feet which shows that the capped leach pad is stable. During the inspection, no signs of settlement, slumping, or cracking on Leach Pad 3 were noted. Also, only some minor erosion (less than one percent of the area) was noted.

There is evidence that deer and other wildlife are using the reclaimed Leach Pad 3 area. Deer and deer pellets were noted in the area during the inspection. The company has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Leach Pad 3 Summary:

See Map A-1. During final grading of the remaining spent ore, limestone was mixed in to mitigate any remaining acid generating potential. Also, leach pad slopes were reduced to 3:1 (H:V). A multi-layer cap, which includes 6 inches of topsoil, was placed on top of the regraded leach pad. After 18 years of growth, Leach Pad 3 has a diverse and self sustaining average vegetative cover of 60 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. The combination of the vegetative and litter cover is proving effective in controlling wind and water erosion on the leach pad. No settling or subsidence of the cap was noted during the inspection. Only minor (less than one percent) erosion was noted in the area during the inspection.

The postmine land use for Leach Pad 3 is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 27.18 acres of Leach Pad No. 3 and place it under postclosure status to monitor and treat exceedances of ground water quality standards in wells in the area (see Hydrology Assessment report).

Leach Pad Corridor

We drove to the corridor between Leach Pad No. 3, Leach Pad 1 and 2, and the Process area at 2:10 pm MDT. We inspected the portion of the corridor to the northeast of Leach Pad No. 3 and west of the Process Area (Photo LPC-1). The total affected and reclaimed acreage for the Leach Pad Corridor is 23.07 acres. Final grading and topsoil placement have been completed. Six inches of topsoil were placed on the graded areas as required in the reclamation plan.

The Leach Pad Corridor was seeded in 1990 and 1991 and was in its 19th and 20th growing seasons at the time of the inspection. The seed mixes used in this area include the grass and forb mix approved in the original reclamation plan. Trees and shrubs were seeded or planted as outlined in the original reclamation plan.

LAC's consultant Bar XX Environmental Services did not collect any vegetative data in the Leach Pad Corridor area. However, Cedar Creek Associates evaluated vegetation in the area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table LPC-1.

Transect	Vegetative Cover	Litter Cover
1	71%	29%
2	85%	15%
3	87%	13%
4	72%	28%
5	81%	18%
6	67%	26%
7	54%	32%
8	29%	46%
9	74%	25%
10	78%	21%
11	82%	16%
12	75%	19%
13	78%	18%
14	74%	22%
15	81%	19%
16	65%	34%
17	67%	27%
18	63%	35%
19	58%	16%
20	54%	38%
Average	70%	25%

The vegetative cover noted during the inspection averaged around 70 percent which is above the 40 percent standard and close to the transect cover average determined by Cedar Creek (Photos LPC-2 and LPC-3). Overall litter cover was estimated around 25 percent which is close to the average determined by Cedar Creek. Grasses and legumes present that are part of the approved

seed mix include timothy, kentucky bluegrass, western, slender, and thickspike wheatgrass, kentucky bluegrass, hard fescue, white dutch clover, and blue flax. Other species noted include crested wheatgrass, yellow sweetclover, alfalfa, black medic, horsemint, assorted vetches, and yarrow. There is a good mix of species in this area with no dominant species apparent.

Noxious and other weeds noted in this area include canada thistle and St. John’s wort. No infestations were noted, but canada thistle and St. John’s wort will need to be sprayed during the postclosure period to keep them under control.

LAC’s consultant Bar XX Environmental did not establish any tree and shrub transects or plots in this area. However, Cedar Creek established 20 belt transects in 2008 to evaluate trees and shrub success in Spruce Gulch. Each transect was 2 m x 50 m. The data is summarized in Table LPC-2.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Serviceberry						2		5	1		3	2						8				21	42.5
Kinnikinnik											11											11	22.3
Paper Birch		1						1														2	4.0
Ceanothus																					7	7	14.2
Juniper									1						1			2		2		6	12.1
Ponderosa Pine							8	16	8				1	1	4	1		5	5	8		57	115.3
Aspen					1			3										1				5	10.1
Bur Oak										1		1	2	1						1	2	8	16.2
Golden Currant		2																				2	4.0
Woods Rose	3			1	3	3			1				2	3								16	32.4
Raspberry	1														3						9	13	26.3
Willow											6											6	12.1
Total	4	3		1	4	5	8	25	11	1	20	3	5	5	8	1		16	6	28	154	311.6	

During the inspection, we looked at trees and shrubs in the Leach Pad Corridor area. Trees and shrubs noted include raspberry, currant, willows, ceanothus, ponderosa pine, aspen, bur oak, chokecherry, and woods rose. Willows and pine trees were especially plentiful along the drainage (Photo LPC-4). A few of the currant bushes were full of fruit at the time of the inspection.

Only some minor erosion (less than one percent of the area) was noted.

LAC placed a HDPE culvert in a small dam in the corridor drainage (Photo LPC-5). The dam and culvert will stay in-place for storm control purposes.

We completed the inspection of the Leach Pad Corridor during the September 30, 2010 inspection.

V-Notch

After taking some time to conduct a final inspection of EXNI-222, we resumed the final inspection of the Richmond Hill Mine. Mike Cepak and Todd Duex left the group at this point to bring two flat tires from the state vehicle to Central City for repair. We arrived at the V-Notch at 3:54 pm MDT (Photo VN-1). The total affected and reclaimed acreage for the V-Notch is 14.96 acres.

The V-Notch was developed in 1996 to create a drainage that would divert water away from the Leach Pad 3 underdrain and provide material for the thermal layer of the leach pad capping systems. The slopes on the V-Notch were reduced to 2.5:1 (H:V) as required in the technical revision. Final grading and topsoil placement have been completed. Six inches of topsoil were placed on the graded areas as required in the original reclamation plan.

The V-Notch area was seeded in 1997 and was in its 13th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision. Trees and shrubs were seeded or planted in various habitat zones as outlined in the July 14, 1998 technical revision.

LAC's consultant Bar XX Environmental Services established two vegetative transects in the V-Notch area (VN-1 and VN-2) and collected vegetation data from each transect from 1997 through 2000, 2005, 2010, and 2013. The data is summarized in Table VN-1.

Table VN-1 – V-Notch Area Vegetation Summary (1997-2005 Data)				
Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
VN-1	45% (1997)	83% (1999)	69%	24%
VN-2	49% (1997)	75% (2010)	65%	20%
Five Year Monitoring Average (1997 – 2005)			67%	22%

Cedar Creek Associates also evaluated vegetation in the V-Notch area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table VN-2.

Table VN-2 – V-Notch Vegetation Summary (2008 Data)		
Transect	Vegetative Cover	Litter Cover
1	70%	28%
2	73%	22%
3	66%	29%
4	47%	28%
5	71%	17%
6	65%	30%
7	77%	17%
8	67%	21%
9	54%	17%
10	63%	14%

11	57%	24%
12	77%	14%
13	67%	24%
14	52%	30%
15	57%	20%
16	72%	19%
17	74%	19%
18	89%	10%
19	54%	29%
20	60%	30%
Average	66%	22%

The vegetative cover noted during the inspection averaged around 65 percent which is above the 40 percent standard and close to the transect cover averages determined by Bar XX Environmental and Cedar Creek (Photos VN-2 and VN-3). Overall litter cover was estimated around 20 percent which is close to the averages determined by Bar XX Environmental and Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth bromegrass, western and slender wheatgrass, hard fescue, white dutch clover, blanket flower, blue flax, and rocky mountain penstemon. Other species noted include green needlegrass, yellow sweetclover, red clover, black medic, horsemint, strawberry, sedges, sage, yarrow, and goatsbeard. Hard fescue is the dominant species.

Noxious and other weeds noted in this area include tansy and St. John’s wort. No infestations were noted, but tansy and St. John’s wort will need to be sprayed during the postclosure period to keep them under control.

Bar XX Environmental established various transects in the V-Notch area to evaluate tree and shrub success from 1997 through 2001, 2003, 2005, 2007, 2009, 2010, 2012, and 2013. Belt transects were established to evaluate containerized plantings in the four habitat zones mentioned on page 17. A macroplot and belt transects were established to evaluate shrub seeding and containerized plantings. Finally, 26 tree spade transplants were evaluated. The number of trees and shrubs found in each transect and plot is summarized in Table VN-3.

	Baseline	1997	1998	1999	2000	2001	2003	2005	2007	2009	2010	2012	2013
Containerized Belt Transects	20	20	9	1	1	1	0	1	1	3	0	2	2
Shrub Macroplot	NA			13	0			2	0	0	1	0	0
Shrub Belt Transects	NA					33	42	46	20	5	13	10	10
Tree Spade Transplants	26	24	22	20	19	15	9	8	7		8	7	7

Cedar Creek also established 20 belt transects in 2008 to evaluate trees and shrub success. Each transect was 4m x 25 m. The data is summarized in Table VN-4.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Oregon Grape													2	3								5	10.1
Black Hills Spruce									1													1	2.0
Woods Rose				1		1							7	3								12	24.3
Raspberry		4	4																			8	16.2
Snowberry		14	13	1									1									29	58.7
Total		18	17	2		1			1				10	6								55	111.3

We inspected tree and shrub plantings in the V-Notch area (Photo VN-4). Trees and shrubs noted include raspberry, ceanothus, serviceberry, ponderosa pine, bur oak, snowberry, oregon grape, chokecherry, and spirea. There are more trees and shrubs in the area than shown in the transect data.

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

We inspected the channel at the west end of the V-Notch. No erosion problems were noted along the channel (Photo VN-5). There are also no issues with the small acid seeps along the channel noted during past inspections (Photo VN-6). During the inspection of EXNI-222, Roberta Hudson inspected the eroded area just below the V-Notch that was repaired in the 1990's. The repaired channel continues to be in good shape, with no new erosion noted.

Only some minor erosion (less than one percent of the area) was noted in the V-Notch area during the inspection.

V-Notch Summary:

See Map A-1. Final grading, landshaping, and topsoil placement in the V-Notch area have been completed. After 17 years of growth, the V-Notch has a diverse and self-sustaining average vegetative cover of 65 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. Trees and shrubs were noted throughout the reclaimed area. The combination of the vegetative and litter cover is effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

The postmine land use for the V-Notch area is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed

deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 14.96 acres of the V-Notch area and place it under postclosure status in the event water quality conditions warrant further assessment.

Crusher Area

We arrived at the former Crusher area at 5:00 pm MDT (Photo CR-1). This was the final stop on the inspection. The total affected and reclaimed acreage for the Crusher Area is 6.65 acres. After construction of the Pit Impoundment was completed, the crusher was removed, final grading and topsoil placement was completed, and the area was returned to original contours. Six inches of topsoil were placed on the graded areas as required in the original reclamation plan.

The Crusher area was seeded in 1997 and was in its 13th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision. Trees and shrubs were seeded or planted in various habitat zones as outlined in the July 14, 1998 technical revision.

LAC's consultant Bar XX Environmental Services established two vegetative transects in the Crusher area (CR-1 and CR-2) and collected vegetation data from each transect from 1997 through 2000, 2005, 2010, and 2013. The data is summarized in Table CR-1.

Table CR-1 – Crusher Area Vegetation Summary (1997-2005 Data)				
Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
CN-1	71% (2010)	93% (1997)	78%	25%
CN-2	64% (2005)	82% (1998)	75%	26%
Five Year Monitoring Average (1997 – 2005)			77%	26%

Cedar Creek Associates also evaluated vegetation in the Crusher area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table CR-2.

Table CR-2 – Crusher Area Vegetation Summary (2008 Data)		
Transect	Vegetative Cover	Litter Cover
1	75%	24%
2	70%	30%
3	80%	20%
4	79%	21%
5	74%	26%
6	70%	26%
7	72%	27%
8	85%	15%
9	74%	25%
10	71%	26%
11	77%	20%
12	87%	13%
13	86%	14%
14	94%	6%
15	85%	15%
16	80%	20%

17	84%	15%
18	72%	24%
19	85%	15%
20	93%	7%
Average	80%	19%

The vegetative cover noted during the inspection averaged around 75 percent which is above the 40 percent standard and close to the transect cover averages determined by Bar XX Environmental and Cedar Creek (Photo CR-2 and CR-3). Overall litter cover was estimated around 20 percent which is close to the averages determined by Bar XX Environmental and Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth bromegrass, western and slender wheatgrass, hard fescue, and blanket flower. Other species noted include yellow sweetclover, alfalfa, black medic, horsemint, goldenrod, goatsbeard, peavine, moss, and yarrow. Hard fescue is the dominant species.

Noxious and other weeds noted in this area include canada thistle, St. John’s wort, and pineapple weed. No infestations were noted, but canada thistle, and St. John’s wort will need to be sprayed during the postclosure period to keep them under control.

Bar XX Environmental established various transects in the Crusher area to evaluate tree and shrub success from 1997 through 2001, 2003, 2005, 2007, 2009, 2010, 2012, and 2013. Belt transects were established to evaluate containerized plantings in the four habitat zones mentioned on page 17. A macroplot was established to evaluate shrub seeding and containerized plantings. The number of trees and shrubs found in each transect and plot is summarized in Table CR-3.

	Baseline	1997	1998	1999	2000	2001	2003	2005	2007	2009	2010	2012	2013
Containerized Belt Transects	5	4	3	1	2	2	0	0	0	0	0	0	0
Shrub Macroplot	NA			2	2			1	2	2	2	2	2

Cedar Creek also established 20 belt transects in 2008 to evaluate trees and shrub success. Each transect was 2 m x 50 m. The data is summarized in Table CR-4.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Aspen													1									1	2.0
Woods Rose																		1				1	2.0
Total													1					1				2	4.0

We inspected tree and shrub plantings in the Crusher area. Trees and shrubs noted include raspberry, currant, ponderosa pine, aspen, birch, and woods rose. There are more trees and shrubs in the area than shown in transect data.

There is evidence that deer and other wildlife are using the reclaimed Crusher area. Some marmot burrows were noted in the area during the inspection. LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Only some minor erosion (less than one percent of the area) was noted.

The inspection ended for the day at 5:25 pm MDT and resumed on September 30, 2010.

Crusher Area Summary:

See Map A-1. Final grading, landshaping, and topsoil placement in the Crusher area have been completed. After 17 years of growth, the Crusher area has a diverse and self-sustaining average vegetative cover of 75 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. Trees and shrubs were noted throughout the reclaimed area. The combination of the vegetative and litter cover is effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

The postmine land use for the Crusher area is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Some marmot burrows were noted in the area during the inspection. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 6.65 acres of the Crusher area and place it under postclosure status in the event water quality conditions warrant further assessment.

September 30, 2010 Inspection

Leach Pad Corridor

Mike Cepak, Eric Holm, Mike Lees, Roberta Hudson, and Mark Keenihan (DENR) met Todd Duex, Mark Tieszen, and Gene Fuller at the Richmond Hill Mine gate at 1:55 pm MDT. We then proceeded to the Leach Pad Corridor to complete the inspection started on August 18, 2010. We arrived at 2:02 pm MDT. During the August 18 inspection, we looked at the portion of the corridor northeast of Leach Pad No. 3 and west of the Process Area. During this inspection, we looked at the area between Leach Pad No. 1 and 2 and Leach Pad No. 3 (Photo LPC-1).

LAC's Consultant Bar XX Environmental did not collect any vegetative cover data in this area. However, Cedar Creek Associates evaluated vegetation in this area in 2008 as part of the release petition. Four systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table LPC-1A.

Transect	Vegetative Cover	Litter Cover
9	93%	7%
10	87%	9%
11	86%	14%
12	79%	21%
Average	86%	13%

The vegetative cover noted during the inspection in this portion of the corridor averaged around 70 percent which is above the 40 percent standard and close to the transect cover average determined by Cedar Creek (Photo LPC-2). Overall litter cover was estimated around 20 percent which is close to the average determined by Cedar Creek. Additional grasses and legumes present that are part of the approved seed mix include purple prairie clover and blanket flower. Other additional species noted include goatsbeard. There is again a good mix of species in this area with no dominant species apparent.

Noxious and other weeds noted in this area are similar to the species noted during the August 18 inspection which includes canada thistle and St. John's wort. No infestations were noted, but canada thistle and St. John's wort will need to be sprayed during the postclosure period to keep them under control.

Cedar Creek did not collect tree and shrub data in this portion of the corridor. However, Bar XX Environmental established a shrub macroplot to evaluate tree and shrub success from 1999 through 2001, 2003, 2005, 2007, 2009, 2010, 2012, and 2013. Belt transects were established to evaluate containerized plantings in the four habitat zones mentioned earlier. A macroplot was established to evaluate shrub seeding and containerized plantings. The number of trees and shrubs found in each transect and plot is summarized in Table LPC-1B.

Table LPC-1B – Total Number of Trees and Shrubs													
	Baseline	1997	1998	1999	2000	2001	2003	2005	2007	2009	2010	2012	2013
Shrub Macroplot	NA			32									

The trees and shrubs in this portion of the corridor are similar to the ones noted during the August 18 inspection. Additional trees and shrubs noted serviceberry, aspen, and birch. A few of the woods rose were full of rose hips at the time of the inspection (Photo LPC-3).

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Leach Pad Corridor Summary:

See Map A-1. Final grading, landshaping, and topsoil placement in the Leach Pad Corridor area has been completed. After 23 and 24 years of growth, the Leach Pad Corridor area has a diverse and self-sustaining average vegetative cover of 70 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. Trees and shrubs were noted throughout the reclaimed area. The combination of the vegetative and litter cover is effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

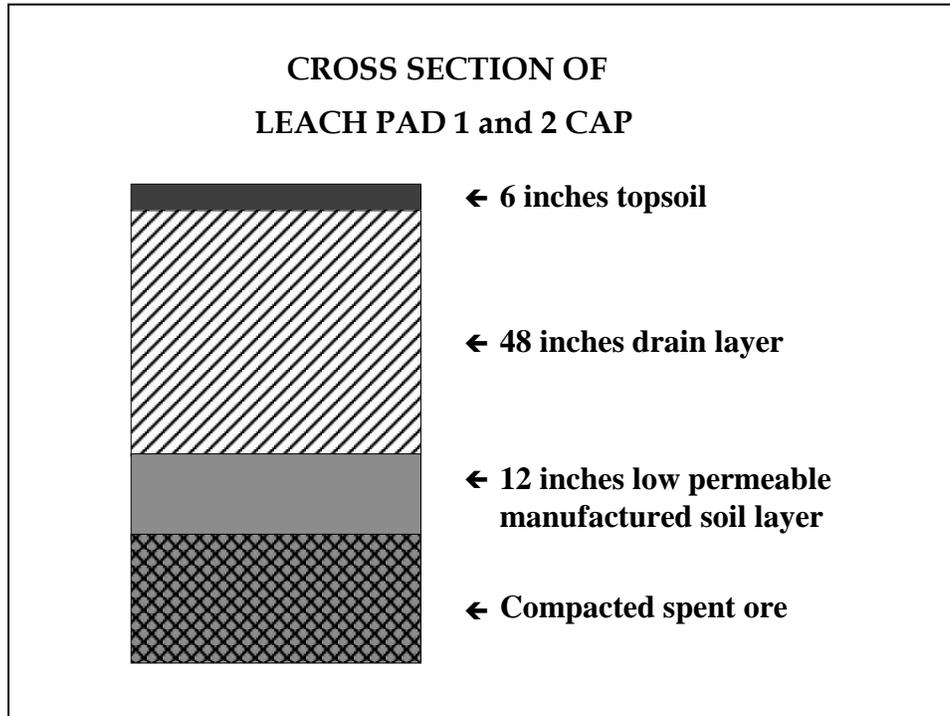
The postmine land use for the Leach Pad Corridor area is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 23.07 acres of the Leach Pad Corridor and place it under postclosure status in the event water quality conditions warrant further assessment.

Leach Pad 1 and 2

At 2:24 pm MDT, we proceeded to Leach Pad No. 1 and 2 (Photo LP12-1). The total affected and reclaimed acreage for Leach Pad No. 1 and 2 is 31.71 acres. We noted a radio tower on top of the leach pad that was recently installed (Photo LP12-2).

During final grading of the spent ore, leach pad slopes were reduced to 3:1 (H:V). Due to acid generating spent ore on the pad, a multi-layer cap was placed on top of the regraded leach pad which was constructed in accordance with the approved plans and specifications as follows:



Leach Pad 1 and 2 was seeded in 1996 and 97 and was in its 14th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the grass mix for capped areas included in the February 16, 1994 ARD permit amendment. Since Leach Pad 1 and 2 was capped, tree and shrub plantings were prohibited.

We asked about the Geo Building just to the south of Pad 1 and 2. LAC personnel said the building will be used for storage during the postclosure period. The building will be removed at the end of the postclosure period.

LAC's consultant Bar XX Environmental Services established two vegetative transects on the leach pad (Pad 1-#1 and Pad 1-#4) and collected vegetation data for the transects from 1998 through 2013. The transects were established on a south facing slope and on the top of the leach pad. The data is summarized in Table LP1-1.

Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
Pad1-#1	46% (2002)	75% (2013)	61%	30%
Pad1-#4	42% (2002)	74% (1999, 2013)	64%	30%
Sixteen Year Monitoring Average (1998 – 2013)			63%	30%

Cedar Creek Associates also evaluated vegetation in the Leach Pad No. 1 and 2 area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table LP1-2.

Transect	Vegetative Cover	Litter Cover
1	82%	18%
2	79%	21%
3	81%	18%
4	63%	37%
5	48%	32%
6	70%	30%
7	74%	26%
8	49%	34%
9	81%	17%
10	85%	14%
11	43%	43%
12	75%	24%
13	74%	26%
14	61%	38%
15	71%	24%
16	81%	18%
17	51%	29%
18	71%	29%
19	84%	16%
20	58%	39%
Average	69%	27%

The vegetative cover noted during the inspection averaged around 65 percent which is above the 40 percent standard and close to the transect cover averages determined by Bar XX Environmental and Cedar Creek (Photos LP12-3 and LP12-4). Overall litter cover was estimated around 25 percent which is close to the averages determined by Bar XX Environmental and Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western wheatgrass, hard fescue, white dutch clover, and blue flax. Other species noted includes alfalfa, black medic, assorted vetches, goatsbeard, moss, and yarrow. Smooth brome grass and hard fescue are the dominant species.

Noxious and other weeds noted in this area include tansy. No infestations were noted, but tansy will need to be sprayed during the postclosure period to keep it under control.

Since trees, shrubs, and other deep rooting species were prohibited from being planted on the capped area, Bar XX Environmental did not collect any tree or shrub data. However, Cedar Creek established 20 belt transects in 2008 to check for any volunteer trees or shrubs that require removal. Each transect was 2 m x 50 m. The data is summarized in Table LP1-3.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Ceanothus	1											2						2				5	10.1
Juniper																	1					1	2.0
Raspberry			1																			1	2.0
Total	1		1									2					3					7	14.2

Even though no trees or shrubs were planted, a few volunteer ceanothus shrubs have been growing on the leach pad (Photo LP12-5). LAC has been spraying the ceanothus to eliminate it from the capped area. A couple of live ceanothus shrubs were noted during the inspection which will need to be sprayed. LAC will need to continue spraying the ceanothus during the postclosure period to keep it off the leach pad. A bur oak tree was noted at the base of the leach pad, but it is off the capped area and causing no problems.

Monitoring results on the capped leach pad show that only minimal settlement has occurred since 1997. Settlement rates have ranged from 0.00 to 0.05 feet which shows that the capped leach pad is stable. During the inspection, no signs of settlement, slumping, or cracking on Leach Pad 1 and 2 were noted. Also, only some minor erosion (less than one percent of the area) was noted.

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Leach Pad 1 and 2 Summary:

See Map A-1. During final grading of the remaining spent ore, leach pad slopes were reduced to 3:1 (H:V). A multi-layer cap, which includes 6 inches of topsoil, was placed on top of the regraded leach pad. After 18 years of growth, Leach Pad 1 and 2 has a diverse and self-sustaining average vegetative cover of 65 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. The combination of the vegetative and litter cover is proving effective in controlling wind and water erosion on the leach pad. No settling or subsidence of the cap was noted during the inspection. Only minor (less than one percent) erosion was noted in the area during the inspection.

The postmine land use for Leach Pad 1 and 2 is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company

identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 31.71 acres of Leach Pad 1 and 2 and place it under postclosure status to monitor and treat exceedances of ground water quality standards in wells in the area (see Hydrology Assessment report).

Administration/Office

The next stop on the inspection was the old administration office area. We arrived at 2:50 pm MDT. The total affected and reclaimed acreage for the Old Administration Office area is 2.78 acres. During final reclamation, the Administration Building was removed and the septic system was pumped out and sealed in accordance with Lawrence County regulations. Final grading and topsoil placement were then completed, and the area was returned to original contours. Six inches of topsoil were placed on the graded areas as required in the original reclamation plan.

Portions of the Administration Office area were seeded in 1991 and were in the 19th growing seasons at the time of the inspection. After the administration building was removed, the remaining portion was seeded in 2003 and was in its 8th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision. Trees and shrubs were seeded or planted in various habitat zones as outlined in the July 14, 1998 technical revision.

LAC personnel said the old access trail through the reclaimed parking lot will be left unreclaimed so wells in the Cole Creek area can be accessed during the postclosure period (Photo ADM-1).

LAC's Consultant Bar XX Environmental did not collect any vegetative cover data for the office area. However, Cedar Creek Associates evaluated vegetation in this area in 2008 as part of the release petition. Three systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table ADM-1.

Transect	Vegetative Cover	Litter Cover
16	65%	21%
17	78%	22%
Average	72%	22%

The vegetative cover noted during the inspection averaged around 65 percent which is above the 40 percent standard and close to the transect cover average determined by Cedar Creek (Photo ADM-2). Overall litter cover was estimated around 25 percent which is close to the average determined by Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, western, slender, and thickspike wheatgrass, hard fescue, and rock mountain penstemon. Other species noted include asters and yarrow. Hard fescue is the dominant species. No noxious and other weeds were noted in this area.

A few volunteer trees or shrubs were noted in the administration office area. Bar XX Environmental and Cedar Creek did not evaluate trees and shrubs in this area.

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation.

Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Only some minor erosion (less than one percent of the area) was noted.

Administration/Office Summary:

See Map A-1. Final grading, landshaping, and topsoil placement in the Administration/Office area have been completed. After 12 and 23 years of growth, the Administration/Office area has a diverse and self-sustaining average vegetative cover of 65 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. Trees and shrubs were noted throughout the reclaimed area. The combination of the vegetative and litter cover is effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

The postmine land use for the Administration/Office area is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 2.78 acres of the Administration/Office area and place it under postclosure status in the event water quality conditions warrant further assessment.

Turnaround Pit

We then proceeded to the Turnaround Pit at 3:00 pm MDT (Photo TA-1). The total affected and reclaimed acreage for the Turnaround Pit is 6.19 acres.

No mining was conducted in the Turnaround Pit area. It was only used to provide construction material during construction of Pad 1 and the process ponds. Also, portions of the area were redisturbed during construction of the Pit Impoundment. The area has been returned to original contours. Final grading and topsoil placement have been completed. Six inches of topsoil were placed on the graded areas as required in the original reclamation plan.

The Turnaround Pit area was seeded in 1991 and was in its 19th growing season at the time of the inspection. The portion redisturbed during construction of the Pit Impoundment was seeded in 1997 and was in its 14th growing season at the time of the inspection. The seed mixes used in this area include the forb, grass, and tree and shrub mixes approved in the original reclamation plan. An area reaffected during the construction of the pit impoundment was seeded in 1996 with the modified grass mix included in the October 11, 1995 technical revision. This area is in its 14th growing season.

LAC's consultant Bar XX Environmental Services established two vegetative transects in the Turnaround area (TA-1 and TA-2) and collected vegetation data for the transects from 1998 through 2013. Each transect was established on a south facing slope and on the top of the leach pad. The data is summarized in Table TA-1.

Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
TA-1	31% (1999)	84% (2013)	51%	21%
TA-2	46% (1998)	77% (2010)	62%	34%
Monitoring Average (1997 – 2013)			57%	28%

Cedar Creek Associates also evaluated vegetation in the Turnaround area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table TA-2.

Transect	Vegetative Cover	Litter Cover
1	77%	20%
2	54%	4%
3	75%	23%
4	72%	20%
5	73%	20%
6	76%	24%
7	53%	31%
8	77%	12%
9	71%	12%
10	75%	14%

11	75%	11%
12	64%	24%
13	69%	24%
14	87%	6%
15	68%	7%
16	60%	30%
17	69%	26%
18	81%	15%
19	41%	11%
20	73%	10%
Average	70%	17%

The vegetative cover data includes trees and shrubs since a mixed-pine forest has become established (Photos TA-2 and TA-3). Vegetative cover noted during the inspection averaged around 65 percent which is above the 40 percent standard and close to the transect cover average determined by Cedar Creek. Overall litter cover was estimated around 20 percent which is close to the average determined by Cedar Creek. Average vegetative cover determined by Bar XX Environmental is lower since canopy or tree cover was not determined in the initial data.

Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, western wheatgrass, hard fescue, white dutch clover, blanket flower, rocky mountain penstemon, and blue flax. Other species noted include little bluestem, black medic, oxeye daisy, asters, goatsbeard, moss, yarrow, and violets. Hard fescue is the dominant species. No noxious and other weeds were noted in this area.

Bar XX Environmental did not collect any additional tree or shrub data in the Turnaround area. However, Cedar Creek established 20 belt transects in 2008 to evaluate trees and shrub success in addition to the species noted in the vegetative cover data. Each transect was 4m x 25 m. The data is summarized in Table TA-3.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Serviceberry	1							1											1	1	4	8.1	
Kinnikinnik						3				3			1					1	11		19	38.4	
Paper Birch		2	2	3	1	3		1		4			3					4	5		28	56.7	
Ceanothus				1	1	1			2												5	28	
Juniper		2																			2	4.0	
Ponderosa Pine		13		12	13	18	46	7	4	23	5	38	23	3	15	8	13	15	40	62	358	724.4	
Aspen						1				1			2						3		7	14.2	
Raspberry		53		16				15	3	4			27				19			14	151	305.5	
Snowberry																		1			1	2.0	
Total	1	70	2	32	15	26	46	24	9	35	5	38	56	3	15	8	32	21	60	77	575	1163.5	

We inspected tree and shrub plantings in the Turnaround area (Photos TA-4). Trees and shrubs in the mixed-pine forest noted include raspberry, currant, ceanothus, serviceberry, snowberry, pin cherry, juniper, ponderosa pine, aspen, birch, black hills spruce, chokecherry, kinickinick, and cottonwood. Ponderosa pine is the dominant species.

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Only some minor erosion (less than one percent of the area) was noted.

Turnaround Pit Summary:

See Map A-1. Final grading, landshaping, and topsoil placement in the Turnaround Pit area have been completed. After 18 and 23 years of growth, the area has a diverse and self-sustaining average vegetative cover of 65 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. Trees and shrubs were noted throughout the reclaimed area, as a mixed-pine forest has become established. The combination of the vegetative and litter cover is effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

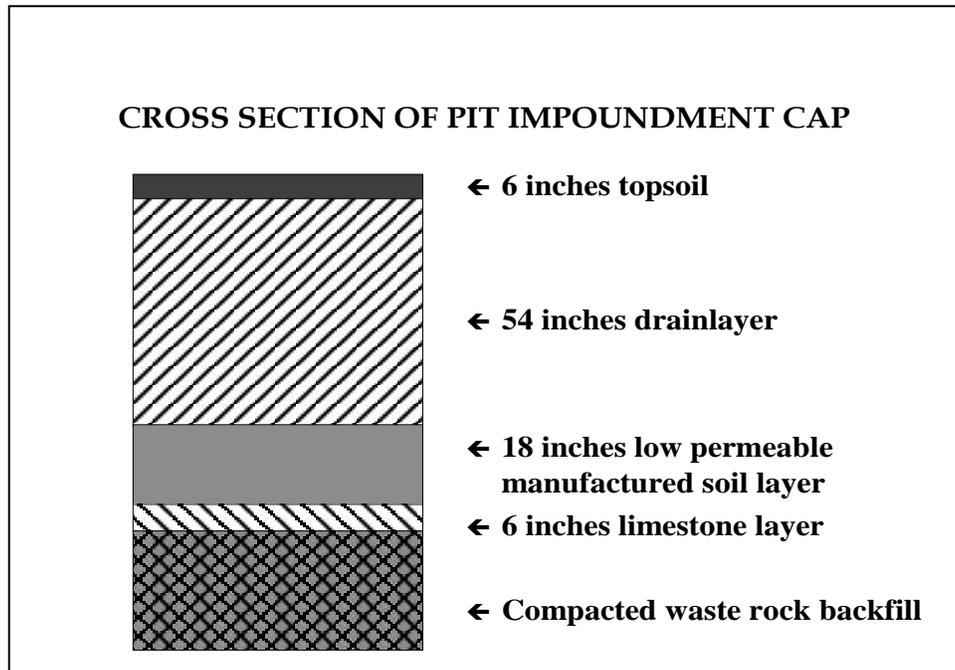
The postmine land use for the Turnaround Pit area is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 6.19 acres of the Turnaround Pit area and place it under postclosure status in the event water quality conditions warrant further assessment.

Pit Impoundment

From the Turnaround Pit, we proceed to the Pit Impoundment and arrived at 3:20 pm MDT (Photo PI-1). The total affected and reclaimed acreage for the Pit Impoundment is 47.54 acres. This does not include the unreclaimed access road (1.16 acres) or the South Gulch Pond (0.05 acres).

Acid generating waste rock and spent ore from the Spruce Gulch Depository and Leach Pad 3 was placed into the former Richmond Hill Pit and compacted in 1994 and 95. The material was compacted in three-foot lifts and contoured at 2.5:1 (H:V) to 3:1 (H:V) slopes. A multi-layer cap, which was placed on top of the regraded impoundment, was constructed in accordance with the approved plans and specifications as follows:



The Pit Impoundment was seeded in 1995 and was in its 15th growing season at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the grass mix for capped areas included in the February 16, 1994 ARD permit amendment. Since the impoundment was capped, tree and shrub plantings were prohibited.

The department asked LAC if the pond liners in the ponds on the impoundment would be removed (Photo PI-2). LAC personnel said the liners would not be removed.

LAC's consultant Bar XX Environmental Services established four vegetative transects on the Pit Impoundment (PI-1, PI-2, PI-3, PI-4) and collected vegetation data for the transects from 1998 through 2013. Each transect was established on a south facing slope and on the top of the leach pad. The data is summarized in Table PI-1.

Site	Minimum Vegetative Cover	Maximum Vegetative Cover	Average Vegetative Cover	Average Litter Cover
PI-1	50% (2002)	79% (2003)	63%	38%
PI-2	46% (2002)	72% (2003)	58%	36%
PI-3	43% (2002)	71% (2003)	56%	28%
PI-4	39% (2002)	58% (2013)	51%	29%
Monitoring Average (1997 – 2013)			57%	33%

Cedar Creek Associates also evaluated vegetation in the Pit Impoundment area in 2008 as part of the release petition. Twenty systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table PI-2.

Transect	Vegetative Cover	Litter Cover
1	55%	25%
2	62%	24%
3	51%	22%
4	70%	23%
5	52%	43%
6	57%	37%
7	55%	34%
8	60%	35%
9	66%	18%
10	63%	21%
11	48%	29%
12	54%	39%
13	56%	41%
14	63%	35%
15	74%	21%
16	67%	27%
17	48%	34%
18	69%	24%
19	60%	29%
20	63%	31%
Average	60%	30%

The vegetative cover noted during the inspection averaged around 55 percent which is above the 40 percent standard and close to the transect cover averages determined by Bar XX Environmental and Cedar Creek (Photos PI-3 and PI-4). Overall litter cover was estimated around 30 percent which is close to the averages determined by Bar XX Environmental and Cedar Creek. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western wheatgrass, hard fescue, white dutch clover, rocky mountain penstemon, and blue flax. Other species noted include black medic,

assorted vetches, asters, goatsbeard, moss, yarrow, and violets. Smooth brome grass and hard fescue are the dominant species.

Noxious and other weeds noted in this area include dandelion, canada thistle, tansy, and St. John's wort. No infestations were noted, but canada thistle, tansy, and St. John's wort will need to be sprayed during the postclosure period to keep them under control.

Since trees, shrubs, and other deep rooting species were prohibited from being planted on the capped area, Bar XX Environmental did not collect any tree or shrub data. However, Cedar Creek established 20 belt transects in 2008 primarily below the capped portions of the impoundment to check for any volunteer trees or shrubs that may require removal. Each transect was 2 m x 50 m. The data is summarized in Table PI-3.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Ceanothus				3	1	3	1	4	8	4		3	1	1							2	31	62.7
Ponderosa Pine		5	1																			6	12.1
Aspen			1																			1	2.0
Pin Cherry		2																				2	4.0
Chokecherry			1																			1	2.0
Currant	3																					3	6.1
Woods Rose	3	3																				6	12.1
Raspberry		88	13		1	1			3			3										109	220.6
Total	6	98	16	3	2	4	1	4	11	4		6	1	1							2	159	321.7

Even though no trees or shrubs were planted, volunteer ceanothus shrubs have been growing on the impoundment. LAC has been spraying the ceanothus to eliminate it from the capped area. A couple of live ceanothus shrubs were noted during the inspection which will need to be sprayed. A dead pine tree was also noted on the impoundment. It appears to have been sprayed. Pine trees were also noted on the highwall benches (Photo PI-5). LAC will need to continue spraying ceanothus and pine trees on the capped portion of the Pit Impoundment during the postclosure period.

Monitoring results on the capped Pit Impoundment show that only minimal settlement has occurred since the facility was constructed in 1995. During the inspection, no signs of settlement, slumping, or cracking on the impoundment were noted. The impoundment appeared to be stable. Remaining highwalls along the northwest and southwest perimeter also appear to be stable (PI-6). Only some minor erosion (less than one percent of the area) was noted.

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Pit Impoundment Summary:

See Map A-1. Acid generating waste rock and spent ore from the Spruce Gulch Depository and Leach Pad 3 was placed into the former Richmond Hill Pit and compacted in 1994 and 95. The material was compacted in three-foot lifts and contoured at 2.5:1 (H:V) to 3:1 (H:V) slopes. A multi-layer cap, which includes 6 inches of topsoil, was placed on top of the regraded Pit Impoundment. After 19 years of growth, the Pit Impoundment has a diverse and self-sustaining average vegetative cover of 55 percent that has proven to be effective and permanent and exceeds the 40 percent live vegetative cover criteria. The combination of the vegetative and litter cover is proving effective in controlling wind and water erosion on the leach pad. No settling or subsidence of the cap was noted during the inspection. Remaining highwalls appear to be stable. Only minor (less than one percent) erosion was noted in the area during the inspection.

The postmine land use for the Pit Impoundment is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. A mountain goat was noted on the Pit Impoundment after it was completed in 1995. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 47.54 acres of the Pit Impoundment and place it under postclosure status to monitor and treat exceedances of ground water quality standards in wells in the area (see Hydrology Assessment report). The access road (1.16 acres) and the South Gulch Pond (0.05 acres), which are unreclaimed and will be used in the postclosure period, are not eligible for liability release at this time.

Haul Road

The next stop on the inspection was the Haul Road. We arrived at 3:50 pm MDT. The 26.04 acre haul road will remain during the postclosure period for access to the Water Treatment Plant and residences in the area. This does not include two topsoil stockpiles (0.24 acres and 0.20 acres). After the postclosure period ends, the haul road is required to be reclaimed with the topsoil from the stockpiles so that the original trail can be restored.

A former topsoil stockpile (2.40 acres) and a portion of the Haul Road near the Administration/Office area (1.54 acres) have been reclaimed. LAC has requested release of reclamation liability for these two areas. Final grading and topsoil placement have been completed. Six inches of topsoil were placed on the graded areas as required in the original reclamation plan. Only some minor erosion (less than one percent of the area) was noted.

During the inspection, we looked at the topsoil stockpile area and the former fuel storage area. The former topsoil stockpile area was seeded in 1995 and was in its 15th growing season at the time of the inspection (Photos HR-1 and HR-2). The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision. The fuel storage area was seeded in 1990 and was in its 20th growing season at the time of the inspection (Photos HR-3). The seed mixes used in this area include the grass and forb mix approved in the original reclamation plan. A portion of the fuel storage area was reaffected in 1994 and 1995 during reclamation of the Pit Impoundment and Spruce Gulch. This area was seeded with modified grass mix included in the October 11, 1995 technical revision. Trees and shrubs were seeded or planted in various habitat zones as outlined in the July 14, 1998 technical revision.

In the fuel storage area, the department told LAC the corridor where the access road will be re-established cannot be part of the release area (Photo HR-4). LAC said it leave a strip of land outside the release area for the road reroute. In the release petition, LAC did not include the fuel storage area under releasable acreage.

LAC's Consultant Bar XX Environmental did not collect any vegetative cover data for the Haul Road area. However, Cedar Creek Associates evaluated vegetation in areas adjacent to the haul road as part of the release petition. Seventeen systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table HR-1.

Transect	Vegetative Cover	Litter Cover
4	69%	14%
5	57%	39%
6	48%	52%
7	52%	32%
8	94%	6%
9	51%	31%
10	71%	17%
11	65%	17%

12	47%	22%
13	73%	7%
14	64%	27%
15	69%	11%
16	55%	36%
17	75%	15%
18	63%	18%
19	71%	27%
20	75%	16%
Average	65%	23%

The vegetative cover noted along the haul road during the inspection averaged around 60 percent which is above the 40 percent standard and close to the transect cover average determined by Cedar Creek. Overall litter cover was estimated around 25 percent which is close to the average determined by Cedar Creek. During the inspection, we evaluated vegetative species in the topsoil stockpile area. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western wheatgrass, hard fescue, and prairie coneflower. Other species noted include green needlegrass. Hard fescue is the dominant species. No noxious and other weeds were noted in this area.

We also evaluated vegetative species in the fuel storage area. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, and hard fescue. Hard fescue is the dominant species. The only other species noted was St. John's wort which is a noxious weed. No infestations were noted, but St. John's wort will need to be sprayed during the postclosure period to keep it under control.

Bar XX Environmental did not collect any tree or shrub data in the Haul Road area. However, Cedar Creek established 20 belt transects in 2008 to evaluate trees and shrub success. Each transect was 2m x 50 m. The data is summarized in Table HR-2.

Table HR-2 - Tree and Shrub Belt Transect Data (2008 Data)

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Paper Birch						2														4	6	12.1	
Ceanothus			1						1													2	4.0
Ponderosa Pine	19	2	3		1	8	5	14	4	26	4	7	1			3	3	5	4	159	268	542.3	
Cottonwood					1			3														4	8.1
Aspen							2	2														4	8.1
Chokecherry						2				1												3	6.1
Bur Oak			1				1															2	4.0
Raspberry						1		1	1			3										6	12.1
Willow								3														3	6.1
Total	10	2	5		2	13	8	23	6	27	4	10	1			3	3	5	4	163	298	603.0	

We inspected tree and shrub plantings in the topsoil stockpile and fuel storage areas. Ponderosa pine was dominant in both the topsoil stockpile and fuel storage areas. Aspen was also noted in the topsoil stockpile area.

Cedar Creek also established 20 belt transects in 2008 in the same area. Each transect was 2 m x 50 m. The data is summarized in Table HR-4.

Transect	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Acre	
Species																							
Juniper																			2		2	4.0	
Ponderosa Pine																	1		12		13	26.3	
Aspen										2											2	4.0	
Chokecherry																			8		8	16.2	
Woods Rose				1	4	3	1	1						7	2						19	38.4	
Total				1	4	3	1	1		2				7	2		1		22		44	89.0	

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

Haul Road Summary:

See Map A-1. Final grading, landshaping, and topsoil placement for the reclaimed topsoil stockpile and the reclaimed portion of the haul road near the Administration/Office area have been completed. After 12 and 23 years of growth, these portions have a diverse and self-sustaining average vegetative cover of 60 percent that have proven to be effective and permanent and exceed the 40 percent live vegetative cover criteria. Trees and shrubs were noted throughout the reclaimed area. The combination of the vegetative and litter cover is effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

The postmine land use for the Haul Road area is wildlife habitat. In the release petition, LAC Minerals addressed how the proposed release areas met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements for the proposed release areas have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for the topsoil stockpile (2.40 acres) and the portion of the Haul Road near the Administration/Office area (1.54 acres) and place them under postclosure status in the event water quality conditions warrant further assessment. The remainder of the haul road (26.04

acres) will be used for access to the Water Treatment Plant during the postclosure period and is not eligible for liability release at this time. Also, two topsoil stockpiles (0.24 acres and 0.20 acres), which will be used to reclaim the haul road at the end of the postclosure period, are not eligible for liability release at this time.

Access Road

The final stop on the inspection was the main access road to the mine site. We inspected the road cuts and fill slopes as we left the site (Photos AR-1 and AR-2). The access road will be a permanent feature which will allow access to the mine during the postclosure period as well as several homes around the mine site. The total affected and reclaimed acreage for the main access road is 11.57 acres. This includes two reclaimed topsoil stockpiles (0.19 acres and 0.24 acres). During the June 11, 2002 mine permit audit, we inspected the two reclaimed topsoil stockpiles. One of the stockpiles belongs to another landowner who installed a well on the stockpile. Since LAC indicated in the release petition there is adequate topsoil for the remaining unreclaimed areas of the mine, the topsoil stockpiles are not needed for reclamation and it was determined LAC's reclamation liability for the stockpiles could be released.

Final grading and topsoil placement have been completed on the road cut and fill slopes. Six inches of topsoil were placed on the graded areas as required in the original reclamation plan and in the January 26, 1998 technical revision. Only some minor erosion (less than one percent of the area) was noted.

Reclaimed portions of the main access road were seeded in 1988 and were in their 22nd growing season at the time of the inspection. The seed mixes used in this area include the forb and grass mix approved in the original reclamation plan.

LAC's Consultant Bar XX Environmental did not collect any vegetative cover data for the main access road area. However, Cedar Creek Associates evaluated vegetation in areas adjacent to the access road as part of the release petition. Three systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table AR-1.

Transect	Vegetative Cover	Litter Cover
1	49%	38%
2	65%	20%
3	38%	28%
Average	51%	29%

The vegetative cover noted along the reclaimed portions of the main access road during the inspection averaged around 50 percent which is above the 40 percent standard and close to the transect cover average determined by Cedar Creek. Overall litter cover was estimated around 25 percent which is close to the average determined by Cedar Creek. We did not evaluate the vegetative species. Some trees and shrubs were noted on the reclaimed areas.

There are also portions of access roads in the Process area that will be permanent features. The Spearfish Fire Trail (Photo AR-3), a portion of the Carbonate Road, and a road to the fossil area noted under Limestone Quarry 1 will allow access to the mine during the postclosure period as well as several homes around the Process area. The total affected and reclaimed acreage for these access roads is 12.05 acres. There is also a 0.38 acre reclaimed portion of an access road just to the northeast of Leach Pad 1 and 2 that will also remain as a permanent feature.

Reclaimed portions of the access roads in the Process area were seeded in 1996 and 1997 and were in the 13th and 14th growing seasons at the time of the inspection. The seed mixes used in this area include the forb mix approved in the original reclamation plan and the modified grass mix included in the October 11, 1995 technical revision.

During our earlier inspections of Leach Pad 1 and 2, the V-Notch, and the limestone quarries, we noted the roads and the associated reclaimed portions. However, we did not evaluate vegetative cover or species in these areas. Cedar Creek Associates evaluated vegetation in reclaimed portions of the Spearfish Fire trail and the Carbonate Road. Seven systematically spaced transects placed in an unbiased manner were established, and the data is summarized in Table AR-2.

Transect	Vegetative Cover	Litter Cover
3	94%	4%
7	94%	5%
8	76%	23%
9	93%	7%
18	77%	16%
19	81%	19%
20	84%	10%
Average	86%	12%

Some trees and shrubs were noted on the reclaimed areas. No tree and shrub data for all of the access road portions was collected by Bar XX Environmental or Cedar Creek.

LAC Minerals has identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. Wildlife species noted on reclaimed areas of the mine site by LAC employees and during past inspections include mule and white-tailed deer, wild turkey, various game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs.

The inspection ended at 4:15 pm MDT.

Access Road Summary:

See Map A-1. Final grading, landshaping, and topsoil placement in reclaimed portions of the main access road and reclaimed portions of the access roads in the Process area have been completed. Also, these roads will be permanent features which will allow access to the mine during the postclosure period as well as several homes around the mine site during and after the postclosure period. After 13 and 22 years of growth, the reclaimed portions of the main access road and the access roads in the Process area have a diverse and self-sustaining average vegetative cover between 51 percent and 86 percent that has proven to be effective and permanent and exceed the 40 percent live vegetative cover criteria. Some trees and shrubs were noted throughout the reclaimed area. The combination of the vegetative and litter cover is

effective in controlling wind and water erosion on the reclaimed area. Only minor (less than one percent) erosion was noted.

The postmine land use for the main access road and access roads in the Process area is wildlife habitat. In the release petition, LAC Minerals addressed how the area met the wildlife habitat postmine land use. The company identified mule and white-tailed deer, least chipmunk, wild turkey, song birds, raptors, squirrel, and insects as the wildlife species that would benefit from the reclamation. There is evidence that deer and other wildlife are using the reclaimed area. Wildlife species noted on reclaimed areas of the mine site from LAC employees and past inspections include mule and white-tailed deer, wild turkey, game birds and raptors, squirrels, coyotes, marmots, green snakes, and frogs. Several of these are included in the list of species identified as benefiting from the wildlife habitat established on the depository. Since the understory vegetation is controlling erosion and the established vegetation appears to be benefitting the identified species, the wildlife postmine land use requirements have been achieved.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 11.57 acres of the main access road (including two topsoil stockpiles), 12.05 acres for the Spearfish Fire Trail, a portion of the Carbonate Road, and a road to the fossil area noted under Limestone Quarry 1, and a 0.38 reclaimed portion of an access road just to the northeast of Leach Pad 1 and 2. A postclosure period is not necessary for the access roads and the two topsoil stockpiles since the roads will be used permanently for access to residences in the area during and after the postclosure period and the topsoil stockpiles are not needed for the remaining reclamation at the mine.

September 4, 2013 Follow-up Inspection

Eric Holm and Mike Cepak (DENR) met Mark Tieszen, Todd Duex, and Gene Fuller (LAC Minerals) at the Homestake office in Central City at 9:50 am MDT to conduct a follow-up inspection of some of the reclaimed areas at the Richmond Hill Mine. The inspection was conducted to confirm there have been no changes in the reclaimed areas at the mine since the 2010 inspections because of the delay in LAC submitting the release petition and postclosure plan package. We proceeded to the Richmond Hill Mine.

Spruce Gulch

We arrived at the mine and proceeded immediately to the Spruce Gulch area at 10:15 am MDT. There was very little change to the reclaimed area since the August 18, 2010 inspection (Photos SG1 through SG-4). Only some very minimal erosion was noted. The eroded areas noted during the 2010 inspection have been repaired. Todd Duex pointed out some volunteer species are invading along the edges of the reclaimed area.

The vegetative cover noted during the inspection continues to average around 65 percent which is above the 40 percent standard. Litter cover appears to be close to the 25 percent overall average. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western, slender, and thickspike wheatgrass, hard fescue, white dutch clover, black medic, lance-leaved coreopsis, rocky mountain penstemon, blanket flower, prairie coneflower, yellow prairie coneflower, purple prairie clover, black-eyed susan, and blue flax. Other species noted include green needlegrass, yellow and white sweetclover, black medic, bedstraw, assorted vetches, goldenrod, asters, goatsbeard, moss, yarrow, and violets. Hard fescue is the dominant species. Noxious and other weeds present include bull and canada thistle, mullein, tansy, St. John's wort, houndstongue, and spreading dogbane. No infestations were noted, but canada thistle, tansy, houndstongue, St. John's wort, and spotted knapweed noted in the 2010 inspection will need to be sprayed during the postclosure period to keep them under control.

We also evaluated tree and shrub plantings in the Spruce Gulch area. Trees and shrubs noted include currant, willow, ceanothus, serviceberry, juniper, ponderosa pine, aspen, birch, bur oak, black hills spruce, oregon grape, chokecherry, woods rose, and spirea. Woods rose and bur oak continue to do exceptionally well in this area. Black Hills spruce numbers have improved since the 2010 inspection.

Pit Impoundment

The next stop on the follow-up inspection was the pit impoundment. We arrived at 11:20 am MDT. There was very little change in the reclaimed area since the September 30, 2010 inspection (Photos PI-1 through PI-4).

The vegetative cover noted during the inspection continues to average around 55 percent which is above the 40 percent standard. Litter cover also continues to be close to the 30 percent overall average. Grasses and legumes present that are part of the approved seed mix include timothy,

kentucky bluegrass, smooth brome grass, western wheatgrass, hard fescue, white dutch clover, rocky mountain penstemon, blanket flower, purple prairie clover, and blue flax. Other species noted include black medic, assorted vetches, golden rod, asters, goatsbeard, hawkweed, moss, yarrow, field pussytoes, and violets. Smooth brome grass and hard fescue are the dominant species. Some cattails were noted in the impoundment ponds. Noxious and other weeds noted in this area include canada thistle, mullein, houndstongue, and St. John's wort. No infestations were noted, but canada thistle, houndstongue, and St. John's wort will need to be sprayed during the postclosure period to keep them under control.

A few volunteer ceanothus shrubs, raspberry, and ponderosa pine were noted growing on the impoundment. LAC has been spraying the ceanothus and cutting the ponderosa pine to keep them under control.

Turnaround Pit

We then proceeded to the Turnaround Pit area, arriving at 11:40 am MDT. There was very little change in the reclaimed area since the September 30, 2010 inspection (Photos TA-1 and TA-2).

The vegetative cover noted during the inspection continues to average around 65 percent which is above the 40 percent standard. Litter cover also appears to be close to the overall average of 20 percent. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, slender and western wheatgrass, hard fescue, white dutch clover, and blue flax. Other species noted include black medic, bedstraw, assorted vetches, moss, yarrow, and violets. Hard fescue is the dominant species. Noxious and other weeds noted in this area include St. John's wort and spotted knapweed. No infestations were noted, but St. John's wort and spotted knapweed will need to be sprayed during the postclosure period to keep them under control.

We inspected tree and shrub plantings in the Turnaround area (Photos TA-3 and TA-4). A mixed ponderosa pine forest with some black hills spruce, aspen, birch and assorted shrubs has become established in the area. Trees and shrubs noted include raspberry, currant, ceanothus, serviceberry, thimbleberry, juniper, ponderosa pine, aspen, birch, black hills spruce, snowberry, chokecherry, and kinickinick. Ponderosa pine is the dominant species.

During the June 19, 2013 audit inspection, we noted numerous small pine trees killed by bark beetles ("ips"). For the most part, the dead trees ranged from 8 to 12 feet in height. We noted the beetle holes in the tree bark and we pulled off pieces of bark to inspect the damage done by the beetles.

We stopped for lunch at 12:08 am MDT. After lunch, we looked at several abandoned mines before resuming the inspection.

Crusher Area

After lunch, the next stop on the inspection was the Crusher area. We arrived at 1:15 pm MDT. There was very little change in the reclaimed area since the August 10, 2010 inspection (Photos CR-1 through CR-4).

The vegetative cover noted during the inspection continues to average around 75 percent which is above the 40 percent standard. Litter cover also appears to be close to the 20 percent average. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western and slender wheatgrass, hard fescue, white dutch clover, blanket flower, and yellow prairie coneflower. Other species noted include crested wheatgrass, yellow sweetclover, white sweetclover, alfalfa, red clover, goldenrod, goatsbeard, lavender, peavine, and yarrow. Hard fescue is the dominant species.

Noxious and other weeds noted in this area include St. John's wort. No infestations were noted, but St. John's wort will need to be sprayed during the postclosure period to keep it under control.

We also inspected tree and shrub plantings in the Crusher area. Trees and shrubs noted include ponderosa pine, snowberry, chokecherry, and woods rose. There continues to be more trees and shrubs in the area than shown in transect data.

Leach Pad 1 and 2

We then proceeded to Leach Pad 1 and 2, arriving at 1:35 pm MDT. There was very little change in the reclaimed area since the September 30, 2010 inspection (Photos LP12-1 and LP12-2).

The vegetative cover noted during the inspection continues to average around 65 percent which is above the 40 percent standard. Litter cover also appears to be close to the 20 percent average. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western wheatgrass, hard fescue, white dutch clover, and blue flax. Other species noted include green needlegrass, alfalfa, black medic, red clover, assorted vetches, moss, and goatsbeard. Smooth brome grass and hard fescue are the dominant species. Todd Duex said alfalfa will need to be sprayed since it has a deep tap root which could compromise the liner on the reclaimed pads.

Noxious and other weeds noted in this area include tansy. No infestations were noted, but tansy needs to be sprayed during the postclosure period to keep it under control.

A few volunteer ceanothus shrubs were noted growing on the reclaimed leach pads. LAC has been spraying the ceanothus to keep it under control.

Leach Pad Corridor

The last stop on the inspection was the Leach Pad Corridor. We arrived at 1:50 pm MDT. There was very little change in the reclaimed area since the August 10 and September 30, 2010 inspections (Photos LPC-1 through LPC-4).

The vegetative cover noted during the inspection continues to average around 70 percent which is above the 40 percent standard. Litter cover also appears to be close to the 20 percent average. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, western, slender, and thickspike wheatgrass, kentucky bluegrass, hard fescue, and white dutch clover. Other species noted include switchgrass, and goatsbeard. There continues to be a good mix of species in this area with no dominant species apparent.

Noxious and other weeds noted in this area include mullein and St. John's wort. No infestations were noted, but St. John's wort will need to be sprayed during the postclosure period to keep it under control.

During the inspection, we also looked at trees and shrubs in the Leach Pad Corridor area. Trees and shrubs noted include raspberry, currant, bur oak, chokecherry, and woods rose. A few of the currant bushes were full of fruit at the time of the inspection.

The follow-up inspection ended at 2:30 pm MDT.

Other Releasable Acreage Inspections

Land Application Area

The Land Application area was not inspected during the August 18 and September 30, 2010 and September 4, 2013 inspections. However, a final inspection of the area was conducted on June 13, 2000. Eric Holm, Mike Cepak, Mark Nelson, Mark Keenihan, and Gary Haag (DENR), Shelly Deisch (GF&P), and Todd Duex and Gene Fuller (LAC Minerals) attended the inspection.

LAC land applied solution in three separate areas between 1993 and 1994 and affected a total of 17.63 acres (see Map A-1). A total of 45 acres was permitted to be affected during the life of the project.

In the original mining plan, LAC planned to construct infiltration trenches during the development of the land application system. The reclamation plan required LAC to backfill, regrade and replace topsoil on the trenched areas. During the inspection, no infiltration trenches were found. Mr. Duex said LAC did not construct any infiltration trenches during the land application activity. We did not find any other land disturbance in the land application area. There is an existing Forest Service Road that was not improved by LAC Minerals. The only improved road is the road Scott and Jeanie Prentice constructed from the Forest Service road to their home.

In order to land apply solution, LAC placed irrigation pipes and sprinklers in the land application area without disturbing any ground. LAC is required in the reclamation plan to remove the pipes and sprinklers. During the inspection, we noted LAC removed all of the pipe and sprinklers from the areas where solution was applied. LAC also installed tensiometers during the land application period to measure infiltration rates. The inspectors decided the tensiometers were no longer needed, and LAC personnel removed them during the inspection (Photo LA-1).

Because LAC did not disturb any ground in the land application area, no grading or topsoil replacement activities were necessary. Therefore, all grading and topsoil performance criteria have been met.

During the inspection, we found some structures and other items that did not belong to LAC Minerals. On the Porto Rico #2 claim, a fire pit, picnic table, and outhouse belonging to the previous landowner were found. A cabin and outhouse belonging to Tim Morton, a landowner in the land application area, were also found. Some plastic pipes and other debris were found on one of the Prentice claims. This appeared to be material left from their trailer home.

LAC removed the pipes, sprinklers and trash it was responsible for from the land application area. The refuse removal criteria have been met.

During previous department inspections, stressed juniper, ceanothus, and pine trees were found in the valve 4 area. This was the only area where stressed vegetation was found. In reviewing the data collected conducted by LAC in 1994 and 1999, high pH and sodium levels caused the stressed vegetation. However, the 1999 report noted that the impact was transitory and that the vegetation has recovered since the last application of solution in 1994. During the final inspection, we found

that the juniper, ceanothus, and pine trees have recovered (Photos LA-2 and LA-3). We also inspected the other areas where solution was land applied and found no impacts. White-veined wintergreen, a sensitive plant species, was found in the valve 1, 2, and 3 area, but was not impacted by the land applied solution.

Vegetation and soil samples were collected in 1991, 1994 and 1999 to assess the impacts of the solution on vegetation and soils in the land application area. Samples were collected in both impacted and non-impacted areas. As mentioned earlier, high pH and sodium levels in the solution stressed the vegetation. The stressed vegetation has recovered since the application of solution ended. Trace metal levels in several plant species and in the soils were at or below detection limits with the exception of barium, zinc, copper, cobalt, cadmium, and nickel. Barium, nickel, and zinc were found in soils and vegetation in both irrigated and non-irrigated areas. However, the vegetation did not show any signs of metal toxicity. The 1999 data showed that the occurrence of trace metals in plant species reflected variation in background levels. The metal levels in the soil show that the soil system is not an on-going reservoir for metals, and no long-term impacts are expected.

No vegetative impacts were found during the inspection (Photo LA-4). LAC did not disturb any ground and did not need to seed any disturbance within the land application area. The vegetative cover, density, and diversity are basically the same as before land application began. The stressed vegetation noted during previous inspections has recovered, and no long-term effects on soils and vegetation are expected. Therefore, all vegetation performance criteria have been met.

During the inspection, no erosion or sedimentation was found. The solution was applied at a slow, controlled rate to prevent erosion. Also, LAC did not disturb any ground in the land application area.

Besides inspecting the area for compliance with reclamation requirements, the group also determined whether the ground water discharge permit could be cancelled. Routine monitoring showed no changes from baseline conditions. No ground water quality standards were exceeded. LAC did not even come close to meeting the loading limits for metals and other parameters established under the ground water discharge permit. Most of the metal loading rates were between 0 and 20 percent of the established limits. The highest loading rate was 43 percent for fluoride in the Valve 4 area. The group's recommendation was to cancel the ground water discharge permit. The permit was cancelled on October 27, 2000.

No surface water impacts were found. The land application area is on top of a ridge, and no perennial streams cross the area. Solution was applied at a slow constant rate so that no solution would run off into intermittent or ephemeral drainages that occur in the area. Routine monitoring showed no changes from baseline conditions. No surface water quality standards were exceeded.

No surface or ground water impacts were found during the inspection or after review of water quality data. The ground water discharge permit was cancelled on October 27, 2000. No erosion was found during the inspection. Therefore, all water quality performance criteria have been met.

Shelly Deisch (Department of Game, Fish, and Parks) inspected the site for wildlife impacts. She said that the area met her agency's criteria for wildlife habitat. As mentioned earlier, the vegetation is basically the same as before land application occurred. LAC did not disturb any ground in the area. The vegetation and soil studies show that there are no metal toxicity concerns. The understory is controlling erosion, as no erosion was found. Therefore, LAC has achieved the post mine land use of wildlife habitat.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for 17.63 acres of the Land Application area. A postclosure period is not necessary for the area due to limited disturbance and impacts during land application and compliance with surface and ground water quality standards.

Passive Treatment Cell

The 0.33 acre Passive Treatment Cell was constructed in 2000 to passively treat leach pad effluent and was operated for approximately one year (see Map A-1). It was shut down after flow through the system could not be maintained. LAC subsequently collected TCLP samples of the substrate material, and all samples met standards. In the Passive Treatment Cell technical revision approved December 27, 2000, LAC was required to remove the cell. However, it left open the possibility that the cell could become a permanent facility. Since the substrate material met TCLP standards, the area was revegetated in 2001 and is now a permanent reclaimed facility.

The Passive Treatment Cell was not inspected during the August 18 and September 30, 2010 and September 4, 2013 inspections since it was not originally proposed to be part of the releasable reclaimed areas. After the department was notified during the June 2014 mine permit audit meeting of LAC's intention to include the cell as releasable reclaimed acreage in the release petition, final inspections of the area was conducted during the mine permit audit inspections on June 24, 2014 and June 10, 2015.

LAC's consultants Cedar Creek Associates and Bar XX Environmental did not collect any vegetative data for the Passive Treatment Cell. However, the vegetative cover noted during the inspections averaged around 65 percent which is above the 40 percent standard (Photos PT-1 and PT-2). Overall litter cover was estimated around 15 percent. Grasses and legumes present that are part of the approved seed mix include timothy, kentucky bluegrass, smooth brome grass, western wheatgrass, and blue flax. Other species noted include black medic and yarrow. There were no dominant species on the reclaimed area. Noxious and other weeds noted include tansy, canada thistle, and dandelion. No infestations were noted, but tansy and canada thistle will need to be sprayed during the postclosure period to keep the species under control. No erosion was noted in the Passive Treatment area.

During the June 24, 2014 inspection, we noted remaining PVC ventilation pipes and distribution system piping still needed to be removed. After the inspection, LAC personnel removed the piping system with little impact to the vegetation. During the June 10, 2015 inspection, we noted the pipes have been removed (Photo PT-3). We also noted the discharge pipe and lined spillway from the cell to the Stormwater Pond (Photo PT-4). Even though the substrate meets TCLP standards, LAC has elected to keep the discharge pipe and spillway during the postclosure period to facilitate the management of any discharge from the cell and any effluent monitoring that may be warranted in the future.

The department recommends that the Board of Minerals and Environment release LAC Minerals' liability for the 0.33 acre Passive Treatment Cell and place it under postclosure status in the event water quality conditions warrant further assessment.

Inspectors: _____ \s/ _____

Date: 6/22/15